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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| 09/092,297 | 06/05/98 | BILLING-MEDEL | P 6107.US.P1-0 |

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| ART UNIT | PAPER NUMBER |
| 1645 | 7 |

DATE MAILED: 06/24/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

Commissioner of Patents and Trademarks

| Office Action Summary | Application No. 09/092,297 | Applicant(s) Billing-Medel |
|---|---|---|
| | Examiner Sharon L. Turner, Ph.D. | Group Art Unit 1645 |

☒ Responsive to communication(s) filed on *5-4-99*.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) *1-44* is/are pending in the application.

Of the above, claim(s) *1-9, 17-24, 26-29, 31, 32, 34, 36, 37, and 40-44* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *10-16, 25, 30, 33, 35, 38, and 39* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

**Application Papers**

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *4*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

*--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---*

## DETAILED ACTION

1. The Examiner of U.S. Patent application SN 09/092,297 has changed. In order to expedite the correlation of papers with the application please direct all future correspondence to Examiner Turner, Technology Center 1600, Art Unit 1645.

2. Claims 1-44 are pending.

### *Priority*

3. The priority date awarded claims 10-16, 25, 30, 33, 35, 38 and 39 is the filing date of the present application, 6/5/98 based on a lack of written description of full length sequences, for instance SEQ ID NO:5 and SEQ ID NO:17.

### *Drawings*

4. The drawings have been approved by the draftsman, however they need to be amended to reflect the appropriate sequence identifier such as SEQ ID NO:X in accordance with the figure legends. See attached PTO-948.

### *Election/Restriction*

5. Applicant's election of Group II, claims 10-16, 25, 30, 33, 35, 38 and 39 in Paper No.6, filed 4-28-99 is acknowledged. Because applicant did not distinctly and specifically point out the

supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

6. Claims 1-9, 17-24, 26-29, 31-32, 34, 36-37, and 40-44 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed in Paper No. 6.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 10-16, 25, 33, 38 and 39 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The specification discloses SEQ ID NO's: 1-5 and 17-20 which correspond respectively to the nucleotide sequence and the amino acid sequence of BL127 expressed in humans. These SEQ ID NO's meet the written description provisions of 35 USC 112, first paragraph. However, the claims describing a BL127 polynucleotide, gene or protein, are directed to or encompass corresponding sequences from other species, mutated sequences, allelic variants, splice variants,

sequences that have a recited degree of identity (similarity, homology), and so forth. None of these sequences meets the written description provision of 35 USC 112, first paragraph.

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that, "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is for purposes of the 'written description' inquiry, whatever is now claimed." (See Vas-Cath at page 1116.)

With the exception of SEQ ID NO's:1-5 and 17-20 of the instant application, the skilled artisan cannot envision the detailed chemical structure of the encompassed nucleic and amino acid sequences and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. The specific nucleic and amino acids are required. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016.

One cannot describe what one has not conceived. See Fiddes v. Baird, 30 USPQ2d 1481, 1483. In Fiddes v. Baird, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Therefore, only SEQ ID NO's:1-5 and 17-20, but not the full breadth of claims meet the written description provision of 35 USC 112, first paragraph. Applicant is reminded that Vas-

Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision. (See page 1115.)

9. Claims 10, 15, 16, 30 and 33 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This rejection addresses the recitation of compositions (claims 10 and 33) of BL172 which correspond to complements of SEQ ID NO's:1-5 and encoding or open reading frames (claims 15-16 and 30) which correspond to complements of SEQ ID NO's:1-5. In this regard the examiner points out that if SEQ ID NO's:1-5 represent BL172 then the complements can not be considered to represent BL172. Similarly, if SEQ ID NO's:1-5 encode the amino acid sequences of SEQ ID NO's:17-20, then the complements can not be considered to represent nucleic acids which encode or represent open reading frames of SEQ ID NO's:17-20. The opposite strand of a nucleic acid is considered its complement, however the complement does not share the same properties of the opposite strand. For instance, the opposite strand exhibits its own melting temperature which is related to the specific nucleic acid sequence and encodes different amino acids from its corresponding complement. In addition, it is well known in the art that the coding strand does not encode products related to the opposite, non-coding strand. The applicant has not provided any guidance or working examples which would lead one of skill in the art to predict, that the complements of SEQ ID NO's:1-5 represent BL172, that the complements encode BL172 protein products (e.g. start sequences, methionine codon, a

substantial open reading frame, stop and other termination signals), or that one of skill in the art could use the complements in the manner specified. The examiner also points out that as claim 11 is currently drawn to a gene which is double stranded the rejection may not apply. However, should the matter in claim 11 be revised to reflect a coding strand, a similar rejection would apply.

10. Claims 10-16, 25, 33, 38 and 39 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for SEQ ID NO's:1-5 and 17-20, does not reasonably provide enablement for sequences that share 50% identity with a BL172 sequence. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with these claims. Claims 10-16, 25, 33, 38 and 39 are drawn to BL172 sequences that share 50% identity with BL172 sequences of SEQ ID NO's:1-5 and 17-20. BL172 sequences other than SEQ ID NO's 1-5 and 17-20 are not described in the specification. The specification gives no direction or guidance as to how the skilled artisan should recognize such sequences, or make such sequences. The specific nucleotides or amino acids which would need to be deleted, inserted, or substituted are unknown to the skilled artisan. There are no parameters or algorithm given by which to decide if a given sequence shares 50% identity. The properties of a BL172 polynucleotide or polypeptide other than SEQ ID NO's:1-5 and 17-20 are unknown and there are no assays disclosed whereby the skilled artisan can measure or determine if a polynucleotide or polypeptide sequence conforms to a BL172 molecule. The properties of any polynucleotide or

polypeptide are specified by the particular sequence structure. The recital of a degree of similarity or the ability to hybridize do not ensure that the artisan can make or use the invention. In this regard, consider the fact that a single amino acid substitution resulting from a single nucleotide change can abolish not only the ability to hybridize under certain conditions but also the ability to exhibit certain functions. Due to this unpredictability in the art and lack of guidance in the specification one of skill in the art would be forced into undue experimentation in order to make and use the invention as claimed.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 11-14 and 38-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 10 recites a BL172 polynucleotide, and claims 11-14 and 38-39 recite a BL172 gene. The disclosed sequences correspond to cloned polynucleotides from ESTs or expressed sequence tags which are derived from either mRNA or cDNA, see particularly examples 1-5 of the specification. A gene generally refers to chromosomal DNA. The examiner also points out that only the coding strand of double stranded DNA has relevance to subsequent protein structure. Although not explicitly recited in claim 10, a BL172 polynucleotide could be construed to encompass a gene. The applicant should clarify the claims and record as to whether or not the invention is intended to encompass genomic sequences.

***Claim Rejections - 35 USC § 102 or 103***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 11, 14, 33, 38 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Hillier et al, EST database sequence accession AA456370, (see also IDS citationAI-1), June 6, 1997, aa14e02.r1 Soares NhHMPu S1 Homo sapiens cDNA clone 813242, 5' mRNA sequence. Claims 11, 14, 33, 38 and 39 are drawn to polynucleotides having at least 50% identity and

fragments of SEQ ID NO's:1-5 and the amino acid sequences encoded thereby, SEQ ID NO's 17-20. Hillier et al, disclose a polynucleotide fragment corresponding with 100% nucleic acid identity, to a fragment consisting of nucleotides 107-485 of instant sequence ID NO:5, see attached alignment. SEQ ID NO's:1-4 correspond to smaller fragments of SEQ ID NO:5, and as such SEQ I D NO's:1-4 are shared in common and are also anticipated by the Hillier sequence. Similarly the amino acid sequence encoded by the Hillier nucleic acid sequence corresponds with nearly 100% identity to the amino acid sequence of SEQ ID NO:17, with only 1 mismatch at position 35, where a Glycine is present instead of an alanine, see attached alignment. As SEQ ID NO's:18-20 are also partial fragments of SEQ ID NO:17, they are similarly anticipated by the amino acid sequence encoded by the polynucleotide of Hillier.

16. Claims 10-16, 25, 30, 33, 35, 38 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,574, 007, Zushi et al, 11/12/96. Claims 10-16, 25, 30, 33, 35, 38 and 39 are drawn to polynucleotide fragments of SEQ ID NO's:1-5, amino acid sequence and epitope fragments encoded thereby SEQ ID NO's:17-20, polynucleotides selectively hybridizing thereto, purified polynucleotides produced by recombinant techniques, polynucleotides produced by synthetic techniques, an expression system including an open reading frame, cells transfected, and a method for producing a polypeptide thereby. Zushi et al disclose a polypeptide capable of interacting with thrombin which shares 40.6% similarity in amino acid sequence of instant SEQ ID NO:17, corresponding to a fragment, see attached alignment. Zushi et al also teaches polynucleotides encoding this polypeptide, the use of recombinantly produced and synthetically

produced polynucleotide segments, segments hybridizing thereto, expression systems including fragments of the open reading frame, cells transfected, and a method of producing polypeptide fragments of instant SEQ ID NO's:1-5 and 17-20, see for example Summary, column 3, figure 31-32 and example 1. The use of fragment terminology refers to a single shared amino acid, encoded by three polynucleotides. Therefore Zushi et al anticipates all of the limitations of claims 10-16, 25, 30, 33, 35, 38 and 39.

17. Claims 10 and 35 are rejected under 35 U.S.C. 102(b) as being on sale and publicly used from Boehringer Mannheim Biochemical , 1991 catalog, page 557. Claim 10 is drawn to a test kit useful for detecting a BL172 polynucleotide fragment comprising a container containing at least one BL172 polynucleotide. Boehringer sells random hexamer primers capable of detecting sequence fragments of SEQ ID NO's:1-5 available in a container. Claim 35 is rejected as being dependent from rejected claim 10.

18. Claims 10-16, 25, 30, 33, 35, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hillier et al, EST database sequence accession AA456370, (see also IDS citationAI-1), June 6, 1997, aa14e02.r1 Soares NhHMPu S1 Homo sapiens cDNA clone 813242, 5' mRNA sequence, in view of Expression of Cloned Genes in E. coli, Sambrook et al, Cold Spring Harbor Laboratory , 1989. Claims 10-16, 25, 30, 33, 35, 38 and 39 are drawn to polynucleotide fragments, fragments encoding, hybridizing fragments, transfected host cells and a method of producing the polypeptide from the transfected polypeptide using a host cell, SEQ ID NO's:1-5 and 17-20. Hillier et al discloses polynucleotide, encoding and hybridizing

fragments of SEQ ID NO's:1-5 and 7-20, however Hillier et al does not teach a transfected host cell and a method of producing the polypeptide fragments using the host cell transfected with the polynucleotide fragments. Sambrook et al teach the expression of polypeptide fragments from cloned DNA sequences, using the DNA sequence, a vector and host cells transformed with the vector. Given the teachings of Sambrook et al it would have been prima facie obvious for one of skill in the art knowing the DNA sequence of Hillier and the techniques of Sambrook to insert the DNA sequence in an expression vector, transfect host cells and produce the polypeptide fragments of SEQ ID NO's:17-20. One of skill in the art would have been motivated to do so based on the ease and effectiveness taught by Sambrook et al for obtaining abundantly produced polypeptides for use in further analysis of the particular proteins properties and functional characteristics.

***Status of Claims***

19. No claims are allowed.

20. Any inquiry of a general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for Group 1600 is (703) 308-4242.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon L. Turner, Ph.D. whose telephone number is (703) 308-0056. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached at (703) 308-3995.

Sharon L. Turner, Ph.D.
June 21, 1999

ANTHONY C. CAPUTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600